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INFORMATION WARFARE (IW):

AIR STAFF ROLES AND RESPONSIBILITIES

A Research Paper

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by

Major Dwayne W. Frye

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Disclaimer

The views expressed in this academic research paper are those of the author(s) and do not reflect the official policy or position of the US government or the Department of Defense.

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Preface

The Air Force believes IW to be critically important to our success in future operations. In fact, Information Superiority (IS) is now identified as an Air Force core competency. Several issues; however, remain which may preclude our successful achievement of IS as a core competency. Specifically, the Air Force has not organized to maximize the advantage offered by IS. We lack an organizational structure which emphasizes incorporation of IW concepts into mainstream AF operational culture. Reorganization must begin at the top of our organizational structure: the Air Staff. This paper describes my evaluation of the Air Staff's roles and responsibilities within IS. It also addresses the suggestion for the formation of a dedicated Information Warfare (IW) Corp to ensure we optimize the incorporation of IW concepts into our standard warfighting "tool kit." It is my hope this paper will stimulate corrective action to ensure the Air Force achieves IS as a core competency in the Air Force.

is my own and I take full responsibility as such. In addition, my faculty research advisor, Major John Corneil, provided insightful critiques and helped keep my research on track. His patience and foresight certainly deserve special note—Thank you, John!

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Abstract

The Air Force intends to incorporate Information Superiority (IS) into "our way of doing business"; to make it a service core competency. To accomplish this objective; it has reorganized the Air Staff, established an Information Warfare Center (AFIWC), and created a deployable IW squadron. Yet all these actions still fall short of what needs to be done to achieve IS as a core competency.

The Air Force must organize its fighting units around information warfare, not strictly around force combat units. It must establish within the Air Force an IW culture - an "IW ethos." To ignore that information has become a critical factor in winning wars and that our doctrine and organization must change to accommodate this reality will ensure the Air Force, like the French in the inter war period (with tanks), will not fully realize the possible benefits from new technologies. The Air Force may claim IS as a core competency, but it will not truly achieve the claim unless it significantly reorganizes.

This paper suggests three possible organizational modifications: (1) create a dedicated IW career field, (2) establish a Joint Force Information Component Commander (JFICC), and (3) establish a new independent IW Corp within DOD. Only two of these suggestions (1 & 2) are recommended for implementation.

Chapter 1

IW and the Air Force

Dominating the information spectrum is as critical now as occupying the land or controlling the air has been in the past.

—General Fogleman

What is Information Warfare and why is it important to the Air Force?

According to the Air Force publication "Information Warfare," IW is formally defined to be : "any action to deny, exploit, corrupt, or destroy the enemy's information and information functions; protecting ourselves against those actions; and exploiting our own military information functions."[1] Less formally, information warfare is an attack (or defense from attack) against an information function.

The Air Force defines three objectives for information warfare: (1) Control, (2) Exploit, and (3) Enhance.[2] Control of the information domain can be achieved through counterinformation operations (similar to counterair in controlling the aerospace environment) and to exploit the information domain, one must attack the enemy's information and his information infrastructures. For example, psychological operations, military deception activities, and destruction of his communication networks all represent means to exploit the information domain. Lastly, information enhancement requires providing timely, accurate, and relevant information. IW can be physically intensive or

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barely noticeable (even subtle). For example, destroying a command and control facility or introducing a destructive computer virus can both reduce an enemies c^2 capabilities and achieve the desired IW objective.

The Air Force is keenly interested in IW for two primary reasons: "First, because information warfare offers important means to accomplish Air Force missions. Second, because widespread integration of information systems into Air Force operations makes our military information functions a valuable target set."[3]

IW provides superior situational awareness of the battlespace, thus allowing us to proactively react and execute within any enemy's Observe, Orient, Decide, and Act (OODA) loop. Our forces can effectively accelerate the pace of operations since they will have a superior knowledge of the battlespace. IW also allows us to leverage our dominate conventional forces through discrete employment of battle power for maximum effect. For example, "the Gulf War Air Power survey concluded that Precision Guided Munitions (PGMs) of Desert Storm were up to a hundred times more effective then the "dumb bombs" used in Vietnam."[4] IW strategy can leverage information superiority to establish and maintain operational and strategic advantages, thus helping the Air Force accomplish its core competencies (and related missions).

The Air Force takes great pride in its advanced technological systems. For example: smart PGMs support precise targeting; aircraft digital "fly by wire" electronic command and control electronics allow radical, high performance, inherently unstable aircraft designs to safely fly; and sophisticated, satellite linked digital communication channels provide near instantaneous command and control of forward deployed forces. It is precisely these technical advantages which provide possible enemies with a valuable target

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set. "Every element of war fighting is becoming increasingly dependent on information obtained from sensors."[5] From the U-2's advanced high resolution, real time imaging sensors to JSTARS Moving Target Indicator (MTI), the Air Force has become highly dependent on these intelligence gathering sensors to dominate the battlespace. Counter information attack will be directed at these types of technologies. For example, disruption of the real time data link or alteration of the data stream flowing from the sensors can effectively negate these critical intelligence systems. The highly acclaimed PGMs will be of little value if the Air Force is unable to find and identify their intended targets (because its "eyes" are closed by an adversary's information attack). As the Air Force becomes more technically sophisticated, it becomes more technically dependent.

General Fogleman recognizes the importance of the "infosphere" to the success of Air Force operations. According to the *Air Force Magazine*, General Fogleman calls the infosphere the "fifth dimension of warfare, on a par with land, sea, air, and space. The infosphere is the virtual world of linked computer networks and communications critical to modern militaries."[6]

In the Air Force publication "Information Warfare," General Fogleman and Air Force Secretary Sheila Widnall indicate the Air Force has made a corporate commitment to integrate IW "into our way of doing business."[7] This verbal commitment must be reflected in actions taken to mainstream IW into the Air Force. Specifically—the Air Force must organize to create an IW ethos—an IW culture. Prior to the current Air Staff reorganization, no executive AF IW lead existed to create the IW ethos necessary to integrate IW into our way of doing business. However, the recent reorganization of the Air Staff appears to have established a lead IW office. The question remains; however,

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are these changes enough? Will establishing a lead IW office allow the Air Force to understand and incorporate the fact that IW is a combat function in the information age and must now be defined as integral to combat?

This paper researches the question: Is the current Air Staff organization sufficient to instill the cultural changes necessary to integrate IW into "our way of doing business?" In the next chapter, I will address the adequacy of the current Air Staff organization; its impact on Air Force IW, and will explain the need for organizational modifications to help ensure the Air Force achieves an IS core competency. The third chapter will suggest possible organizational modifications and will explain why they are vital to achieve the desired IS core competency. The fourth chapter will recommend specific modifications and the final chapter will summarize the paper.

Research Approach

A questionnaire was submitted to several Air Force IW staff offices and field organizations to obtain the required research support data. A sample of the questionnaire is included in Appendix A. Appendix B provides the responses. Additionally, several current publications have raised related IW organizational issues; hence, they have also been a valuable source of information.

Notes

[1] Air Force Publication, *INFORMATION WARFARE*, undated, 5.
[2] Air Force Publication, *INFORMATION WARFARE*, undated, 7.
[3] Air Force Publication, *CORNERSTONES OF INFORMATION WARFARE*, undated, 7.
[4] Lawrence Casper et al., "Knowledge Based Warfare: A Security Strategy for the Next Century," *JOINT FORCES QUARTERLY*, Autumn 1996, 81-89.
[5] Shane Deichman, IW article, *SIGNAL*, November 1995, 73.

Notes

[6] Robert S. Dudney, "The Core Competencies of the Force," *AIR FORCE Magazine*, January 1997, 24-29.

[7] Air Force Publication, *INFORMATION WARFARE*, undated, 15.

Chapter 2

Current Air Staff IW Offices: Roles and Responsibilities

To win [wars] one must be organized to take advantage of the opportunities offered by the information revolution

—Martin Libicki & James Hazlett
"Do We Need An Information Corps?"

Previous Air Staff Organization: Where does IW belong?

At the 1996 Air Force Association symposium, the Air Force publicly announced its latest (six) core competencies: (1) Air and Space Superiority, (2) Global Attack, (3) Rapid Global Mobility, (4) Precision Engagement, (5) **Information Superiority**, and (6) Agile Combat Support[1], but until recently the Air Staff was not organized to support achieving core competency in Information Superiority. The Air Staff, however, has just implemented a significant reorganization which should provide needed leadership and doctrinal guidance in the area of IW. Before explaining why the new structure will help the incorporation of IW into "our way of doing business," we must first identify the inadequacies of the previous structure.

Consider the previous organization shown in Figure 1.[2] In this hierarchy, the operations (XO) Deputy Chief of Staff (DCS) and the intelligence DCS (IN) report independently (albeit with interstaff coordination) to the Chief of Staff of the Air Force (CSAF). One of the key responsibilities of XO; besides representing the "operators and

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their warfighting requirements," is the development of Air Force doctrine. IN is tasked with supporting the intelligence needs of the Air Force.
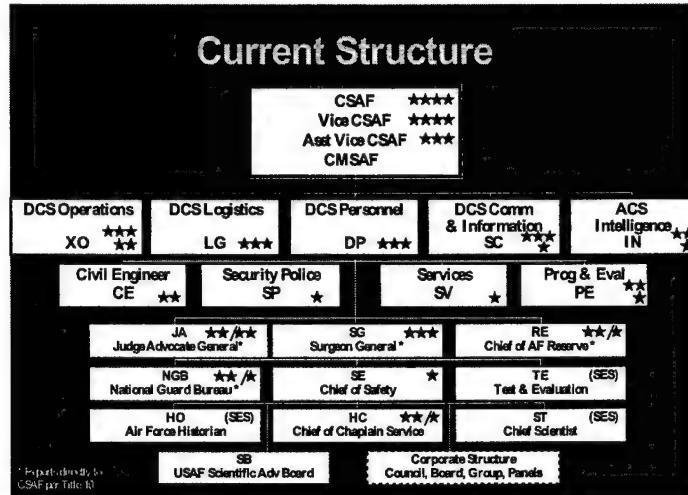
Figure 1. Previous Air Staff Organization (as of Dec 96)

Often the program requirements identified by the XO community compete against the requirements identified by the IN community. As a result, extensive negotiation and coordination are required to satisfy both communities' requirements within our limited resource environment. To further complicate the issue for IW, the intelligence community initially surged to the leadership position. As exemplified by the following quote:

> Flying lead in this ongoing endeavor is the Air Force Information Warfare Center (AFIWC). The facility, a part of the Air Intelligence Agency, ...investigates and develops offensive and defensive information-based warfare and information warfare techniques.[3]

Normally this proactive initiative to lead is considered a positive development. The issue; however, results from XO's responsibility to develop Air Force doctrine. IN assumed the lead for an activity which woefully lacks guiding doctrine. Furthermore, the necessary doctrine must be developed by a "competing" air staff office. Therefore, IN was leading the Air Force IW direction and focus without a corporate statement (doctrine)

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of the Air Force's desired IW objectives. Their only guidance was that the Air Force intended to make IS a core competency. Thus without the necessary guiding doctrine, the initial Air Force IW activities could very easily have been misguided. A real world example illustrates the point: Recently a reconnaissance system architecture was installed to support real-time reconnaissance missions in the Bosnian theater. This architecture required the collected information to be processed and analyzed in the United States. Dissemination of the processed intelligence information is routed through an intelligence center in Europe before being sent to the Bosnian theater Air Operation Center (AOC), thus resulting in an unnecessary (and some times significant) delay of the vital intelligence information. The affected operators (XO) are disgruntled with this dissemination path.[4] However; they lack definitive IW doctrine to support their position. Hence, their issue has not been resolved.

A key attribute of intelligence quality that should be included in IW doctrine is the *timeliness* of the data.[5] If such IW doctrine had existed, perhaps a more optimum dissemination architecture would have been developed to satisfy both the intelligence and operations desires.

In addition, the Air Force had not formally recognized the IN community as the lead organization for IW in the Air Force. Therefore, IN's assumption of the lead role exacerbated the issue of incorporating IW into the mainstream Air Force because field organizations did not have a definitive IW single point of contact within the Air Staff. This fact was demonstrated by the responses received to questionnaire question numbers 4 and 5[6] (reference Appendix B). Generally, field organizations recognized the Air Staff office they primarily interfaced with as the IW lead office.

Fortunately, the recent Air Staff reorganization appears to have eliminated most of the issues which would have hindered incorporation of IW into "our way of doing business." For example, consider the revised Air Staff organization in Figure 2[7]

New Air Staff IW Offices & Their Missions

Figure 2 is only a subset of the entire Air Staff organization, but it demonstrates a critical aspect of the reorganization. Notice the incorporation of Intelligence functions into XO. Specifically, Reconnaissance, Surveillance, and Information Operations now are contained within a new XO directorate (XOI).
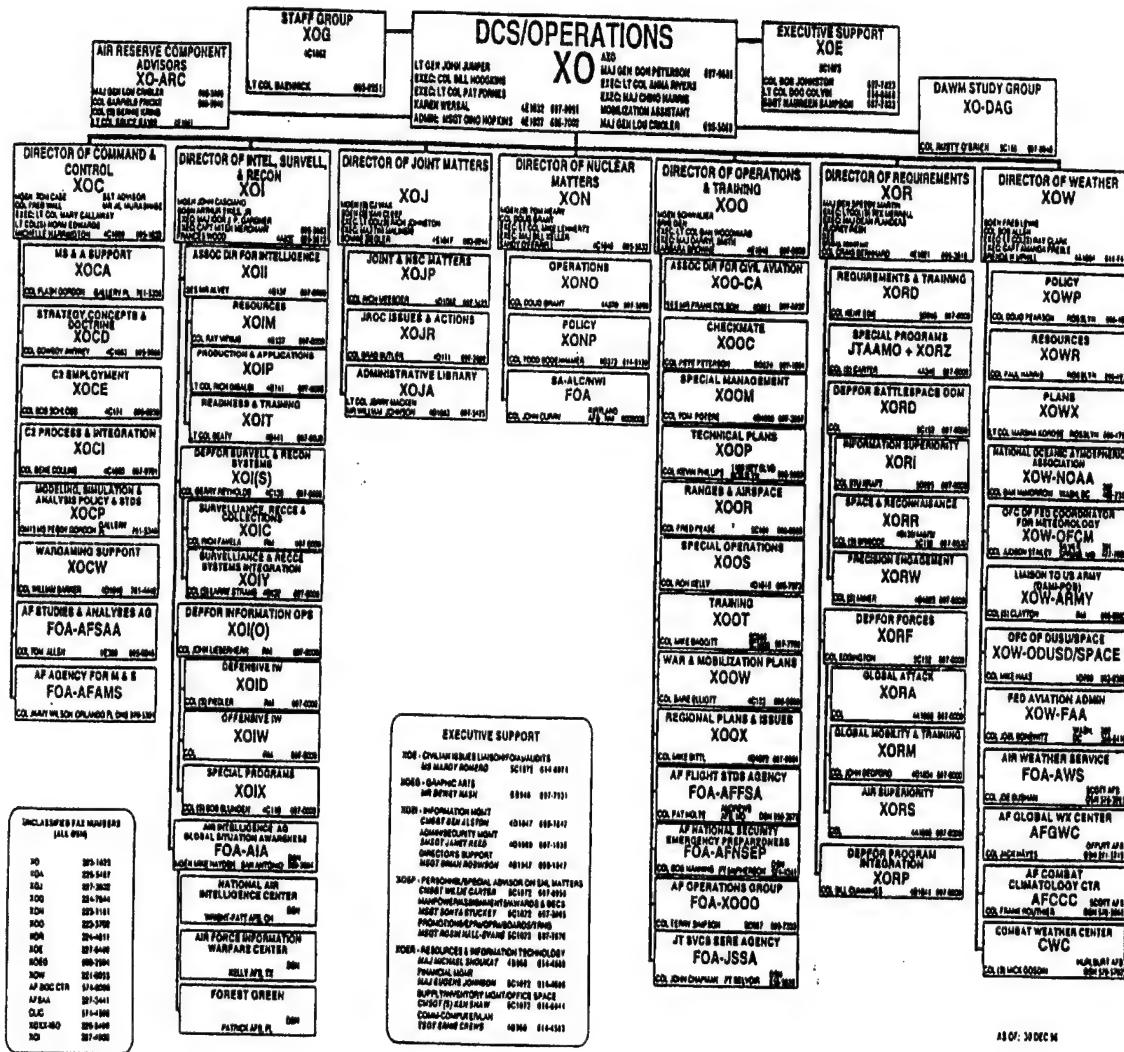
Figure 2. Reorganized Air Staff Operations Organization (as of 30 Dec 96)

As a result of this change, XOI is now identified as the lead IW Air Staff office. In addition, they are included within the DCS responsible for developing Air Force doctrine (XO). This change will undoubtedly improve cooperation and coordination between the "doctrine/policy folks" in AF/XOXD and the "IW warriors" in AF/XOI. Close coordination in these areas should significantly improve Air Force attempts to incorporate

IW into "our way of doing business." Doctrine will be developed with a strong "real world operator" perspective (due to XOI's presence) and not solely from a "policy driven staff environment" perspective (which might have occurred in solely an IN/XO coordination process). According to the Air Force magazine, "Air Force officials stated the merger of intelligence with operations would lead to creation of an information operations culture."[8]

Based upon the research conducted for this paper, there are two key Air Staff directorates working IW issues: AF/XOI and AF/SCT. Each has distinct responsibilities and roles to execute in the development of IW in the Air Force. For example, AF/XOI's specific responsibility is: "the Deputy Directorate for Information Operations (IO) and as such is the Air Staff focal point for all IO issues. NOTE: IO is an overarching term that includes all information activities such as Information Assurance, C4ISR, navigation, storage and transmission, PSYOPS, Deception, and attack/destruction. These activities are performed across the "war spectrum" of peace-conflict-war-restoration-peace. Information Warfare is the application of IO to achieve military objectives." As an example of the severe lack of guiding IW doctrine, consider that AF/XOI, the lead Air Staff IO point of contact, does not currently have an approved mission or "charter" statement.[9]

Within the SCT directorate, the information warfare division (AF/SCTW) has the responsibility for "Information Assurance (IA). IA is defined as: Information Operations that protects and defends information and information systems by ensuring their availability, integrity, authentication, confidentiality and non-repudiation. This includes providing for restoration of information systems by incorporating protection, detection,

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and reaction capabilities. Their specific functions include: (1) Policy/Strategy/Guidance, (2) Education, training, and awareness, (3) Technology assessment oversight and requirements review, (4) Program Element Monitor (PEM) ownership of PE #: 33140 (Cryptologic support and funding of AFIWC/EA activities) (5) Oversight of Base Information Protect (BIP) in partnership with AF/SCMI, (6) Oversight of ESC/ICW and AFIWC/EA, and (7) Representation on IA forums at Service; DOD; and National levels."[10] Unlike AF/XOI, AF/SCTW has an approved mission statement. It is to: "Provide timely, effective, and concise Information Assurance policy, guidance, strategy, capabilities, and program oversight to Air Force people for military operations."[11]

Within the Secretariat's Acquisition community, the Information Dominance Directorate (SAF/AQI) leads the acquisition support activities for IW. "AQI is the mission area responsible for acquisition of information dominance programs within the Air Force - sensors, command & control, infrastructure, data links, and related IW programs. Our charter is governed by the operational requirements levied by the users of info ops systems."[12] AQI recognizes the embryonic nature of organizational IW relationships in the Air Force. For example, the director of SAF/AQI, Brigadier General Nagy believes, "There are a number of domains attached to this construct [IW] - no one agency has the entire picture. I expect a great deal of evolution in our thinking about information superiority, info ops, and how to best serve warfighter needs over the coming months and years. The exciting thing is that our senior leadership is very much engaged, and we recognize the huge leverage (and vulnerability) the future holds in this area."[13]

Who is the recognized IW lead in the Air Staff?

The recent reorganization of the Air Staff has formalized the answer to this issue: The lead office is clearly AF/XOI. Predictably, it will take time for "the word" to reach the associated IW field organizations. The responses to the distributed questionnaire indicate sufficient time has not yet passed—none of the contacted field organizations specifically identified AF/XOI as the lead Air Staff IW office.[14] Thus, confusion in the IW arena still persists. This is partly due to the recent occurrence of the reorganization, and to the lack of formal, approved IW doctrine. The questions remain: Are these Air Staff organizational changes enough? Will establishing a lead IW office allow the Air Force to understand and incorporate the fact that IW is a combat function in the information age and must now be defined as integral to combat? To answer these questions, we should first consider the primary field organizations working the IW issues.

Field IW Organizations & Their Missions

The Rome Laboratory (RL) in Rome, NY is the

> lead Air Force laboratory responsible for performing research and development in support of Information Dominance. RL supports the achievement of Information support through research, development, and fielding of advanced defensive (information protect) tools, technologies, and techniques.[15]

Rome laboratory has recently established a dedicated IW office which will "focus IW related research and development activities to support the Air Force warfighters and Joint/Coalition forces."[16] RL also lacks an approved IW mission statement/charter. For guidance on IW requirements, existing architectures, and future direction, RL coordinates primarily with AFIWC and AF/SCT. Therefore RL considers "AF/SC the "primary doer"

in working related IW doctrine and issues at the Air Staff." However, "they also recognize AF/XO is involved as well." RL personnel recognize the need for the Air Force to reorganize for IW. For example, consider one of their comments: "The current state of [IW] organization is a mess. Most organizations don't appear to talk to or interact with others (both within and outside the AF)." [17]

The Air Force Information Warfare Center's (AFIWC) primary mission is "to develop, maintain, and deploy information warfare/command and control (IW/C^2W) capabilities in support of operations, campaign planning, acquisition, and testing. The center acts as the time sensitive, single focal point for intelligence data and C^2W services. It provides technical expertise for computer and communication security (COMPUSEC/COMSEC) and is the Air Force focal point for tactical deception (TD) and OPSEC training."[18]

The Air Force has already established a "prototype Information Warfare squadron" - the 609th, located at Shaw AFB.[19] The 609th's primary purpose is to "devise the strategy and tactics needed to protect command, control, and communications (C^3) assets while denying the enemy use of its information systems." When establishing the prototype IW squadron, General Ralston (the Air Combat Command (ACC) commander) commented that while "IW encompasses many aspects," he would "limit the scope of the squadron's activities to information systems, and would leave other information missions like reconnaissance, surveillance, and communications in the current structure." [20]

The sampling of field organizations involved in IW demonstrate the seriousness with which the Air Force is attempting to incorporate IW into its "way of doing business." The Air Force is performing basic IW research and development (RL), linking IW acquisition

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and (information protect) IW activities to the warfighter (AFIWC), providing a deployable IW squadron (609th), and even implementing a new Air Staff organizational structure. Yet, the Air Force is not performing the most critical step necessary to truly achieve Information Superiority as a core competency. The Air Force is not reorganizing to maximize the benefits provided by the new information technologies. Specifically, the Air Force remains organized around units of combat force and needs to organize around information as a critical element of combat.

Issues with Existing Organization

The Air Force has not completely accommodated the fact that warfighting is rapidly changing: shifting away from application of combat force towards application of information attack (from dropping smart bombs towards dropping "byte" bombs). It remains organized around "units of force."[21]

A historical example demonstrates the need for the Air Force to reconsider its current organizational structure. Consider the interwar period between World War I and WWII. During this time both Germany and France developed tanks (a dramatic new technology). The Germans recognized the importance of the new technology and "remade' their Army —completely reorganizing its fighting doctrine and fighting units around the benefits offered by the new tank. They developed a new 'blitzkrieg" doctrine and new "panzer" tank divisions. These changes established a new "blitzkrieg ethos" within the German Army, fundamentally impacting promotions, training, and, strategy. The result was an explosive increase in war fighting capability for the Germans. The French, on the other hand, merely attempted to overlay the new tank technology onto their existing doctrine,

strategy, and war fighting organizational structure. They saw the tank as a means of improving the way they had always fought wars. The result of this conservative approach is well known. The French were mercilessly overrun and out maneuvered on the battlefield by the lightning fast blitzkrieg panzer divisions.[22]

The Air Force IW organizational changes made thus far mirror the conservative changes made by the French after the development of the tank. To avoid our own Air Force from being "out maneuvered on the battlefield" by an enemy who realizes the critical impact information will have on combat, we must reorganize around information as a "unit of force." The next chapter suggests three possible organizational modifications which would will help ensure the Air Force does not miss the significant opportunities offered by future Information Warfare.

Notes

[1] Robert S. Dudney, "The Core Competencies of the Force," *AIR FORCE Magazine*, January 1997, 24-29.

[2] Col Drennan's "Air Staff Reorganization" information briefing to the ACSC class, Jan 1997.

[3] Andrew Braunberg, "Air Force Pursues Two-Sided Information Warfare Strategy," SIGNAL, July 1996, 63-65.

[4] Personal Knowledge acquired during Air Staff assignment.

[5] Joint Pub 2-0, "Attributes of Intelligence Quality," *Joint Doctrine for Intelligence Support for Operations*, 5 may 1995, IV-15.

[6] Air Staff questionnaire submitted Jan 97 by Major Frye.

[7] DCS/OPERATIONS Organization Chart, as of 30 Dec 96, provided by Major Jim Turner, SAF/AQIJ, 7 Mar 97.

[8] Suzann Chapman, "Air Staff gets New Look," *Air Force Magazine*, February 1997, 9.

[9] Air Staff questionnaire submitted Jan 97 by Major Frye

[10] Ibid.

[11] Ibid.

[12] Ibid.

[13] Ibid.

[14] Ibid.

[15] Ibid.

Notes

[16] Ibid.

[17] Ibid.

[18] "Information Warfare Related Organizations, Missions, and Functions," *INFORMATION WARFARE: LEGAL REGULATORY, POLICY, AND ORGANIZATIONAL CONSIDERATIONS FOR ASSSURANCE*, 2nd edition, 4 July 1996, a-57.

[19] Ibid.

[20] Pat Cooper and Frank Oliveri, "Air Force Carves Operational Edge In Info Warfare," *DEFENSE SCIENCE NEWS*, August 21-27, 1995, 29.

[21] Martin C. Libicki and James A. Hazlett, "Do We Need An Information Corps?," *JOINT FORCE QUARTERLY*, Autumn 1993, 88-97.

[22] Jeffery Barnett, *Future War*, January 1996, 14.

Chapter 3

Suggested Organizational Modifications

The information age will define the 21st century and it will impact all we do as an Air Force

—General Fogleman

The previous chapter demonstrated that the French lost an excellent opportunity to maximize benefits from new technology because they failed to redefine their doctrine and to reorganize their basic fighting units to accommodate the new tanks available. Further, it illustrated how the Germans achieved maximum benefit from the new technology by reorganizing their doctrine, training, promotion systems, and basic fighting units around the tank.

This chapter will suggest specific organizational modifications which could be implemented to help ensure the Air Force does not miss the significant opportunities offered by future Information Warfare. The suggestions will range from moderate, service specific modifications which would be relatively easy to implement, to more aggressive, more encompassing (Department of Defense) joint level modifications, and will finish with a suggestion for the formation of a separate, dedicated IW corp within the DOD.[1]

How Does Organization Impact the Air Force IW Culture?

One of the issues with the current Air Force approach to organize for IW involves the lack of establishment of an IW ethos or culture. Currently the Air Force supports, motivates, and rewards officers who deliver combat force (the pilots). The operators of combat aircraft receive monetary bonuses (flight pay), espirit de corp motivational items (leather jackets), and career motivation (opportunity for senior level positions of responsibility). Mission support personnel such as intelligence, communications, system engineers, and computer security receive no such "cultural ethos" emphasis. As a result, these officers tend to think of themselves as intel, comm., and acquisition officers, not as Air Force warriors. The issue involves the need for these particular disciplines to establish and support an IS core competency within the Air Force. IW requires personnel steeped in knowledge of intelligence, communications, security, and system engineering.

> The information warrior must know not only programming but systems integration and systems theory, communications, security, artificial intelligence, logic in all its many forms (classical , fuzzy, and convergent), and statistical techniques. The information warrior must also know the customer's needs: the commander's intent, doctrine, and strategy. The amount of information necessary to be an information warrior is immense, and the time required to master it will have to be at the expense of a more general command instruction.[2]

The lack of a cultural ethos may impact the Air Force's ability to attract and maintain a well trained, superior core of information warriors. This concern is also shared by some of the Air Staff Division Chiefs who responded to the distributed IW questionnaire. For example, one of the affirmative answers to question number six (reference appendix B) was, "Yes for one fundamental reason. If we do not, we will not be able to attract and

keep skilled people. If they see no future potential in the organization to progress, they will leave."[3]

Establish a Dedicated IW Career Field

A relatively simple solution to this lack of "IW ethos" within the Air Force would be to establish a separate and distinct career field for IW warriors. This could be accomplished by creating an IW Air Force Specialty Code (AFSC) and affording it the same type of "operational status" currently enjoyed by the "rated" AFSCs. The Air Force needs to provide the same type of incentives to the IW career field as they do to the pilot career field. To further ensure the formation of an IW ethos and hence the achievement of IS as a core competency, IW training programs and exercises geared towards enhancing the IW operators capabilities must be developed and institutionalized.

It is imperative to identify the new AFSC as an **operational** career field for several reasons: (1) it will provide career motivation to the IW core by providing opportunity to rise to the highest positions of responsibilities within the Air Force, (2) it will attract and keep the brightest personnel as a result of possible progression to the highest ranks, and (3) it will firmly establish the linkage of IW to combat. The Air Force should also establish several senior level (flag officer) IW "slots" to further demonstrate their IS sincerity and to help achieve IS as a core competency. As the Air Intelligence Agency (AIA) Commander, Major General Minihan emphasized the importance of information dominance in the 21st century when he said,

> We are at a critical tuning point in military history. An information revolution is sweeping the world, forcing change as radical as that caused by the development of the atomic bomb...Getting comfortable with the

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ideas behind information dominance is the prerequisite for being allowed on the battlefields of the 21st Century."[4]

Even in the current downsizing environment, actual implementation of a new IW career field is extremely feasible. The Air Force can create the IW AFSC by transitioning interested acquisition, intelligence, and communication experts from their current AFSC positions. As previously indicated, knowledge from these particular career fields is vital for an IW warrior. Furthermore, the current acquisition and intelligence career fields are staffed at comfortable levels. Thus, the functions performed by these AFSCs would not detrimentally suffer from a transfer of personnel into the new IW career field. New Air Force members can also be used to staff the IW AFSC, although they will require extensive training to accommodate their lack of experience and expertise in the required disciplines.

In short, the Air Force can establish and fully staff a new IW AFSC without increasing its total force requirements by drawing from appropriate "well manned" AFSCs and training new Air Force members as IW warriors.

Create A Joint Forces Information Component Commander (JFICC)

The second suggestion involves a more aggressive organizational modification. It parallels the joint forces air component commander—the JFACC. The JFACC "derives authority from the joint force commander who has the authority to exercise operational control, assign missions, direct coordination among subordinate commanders, redirect and organize forces to ensure unity of effort in the accomplishment of the overall mission."[5] The JFACC typically "integrates the air power of different nations and services, devises ways to exploit the different capabilities of the available air assets while reducing their

limitations, plans operations that maximize the total combat power and synergy of the aggregate air effort, and conducts an effective theater air campaign."[6] The Joint Chiefs of Staff should initiate the process to create a similar position for Information Warfare—the Joint Forces Information Component Commander (JFICC).[7] The JFICC would be charged with several specific responsibilities, such as : (1) "to collect information on enemy capabilities, deployments, and intentions, (2) to fuse data collected from all sources and distribute timely information to users, (3) to flow friendly information efficiently, even in the face of enemy attacks and competing friendly requirements, (4) to degrade enemy information networks, and (5) to defend friendly information networks against enemy intrusion.

Aerospace forces should expect heavy taskings in support of the JFICC."[8] Aerospace forces are uniquely suited to provide much of the intelligence information required by a JFICC. Consider, for example, the extensive airborne reconnaissance and surveillance infrastructure currently available within the Air Force. The Air Force uses U-2s, UAVs (Darkstar and Global Hawk), AWACs, Rivet Joints, and Joint Stars to collect and disseminate real time intelligence critical to successful JFICC mission accomplishment. Creation of a JFICC will help minimize the independent services' inevitable competition for IW resources and command authority within a theater during a conflict, it will also help ensure a fully coordinated IW effort against the enemy. A possible JFICC organizational structure is shown below in figure 3.

Possible JFICC Organizational Structure
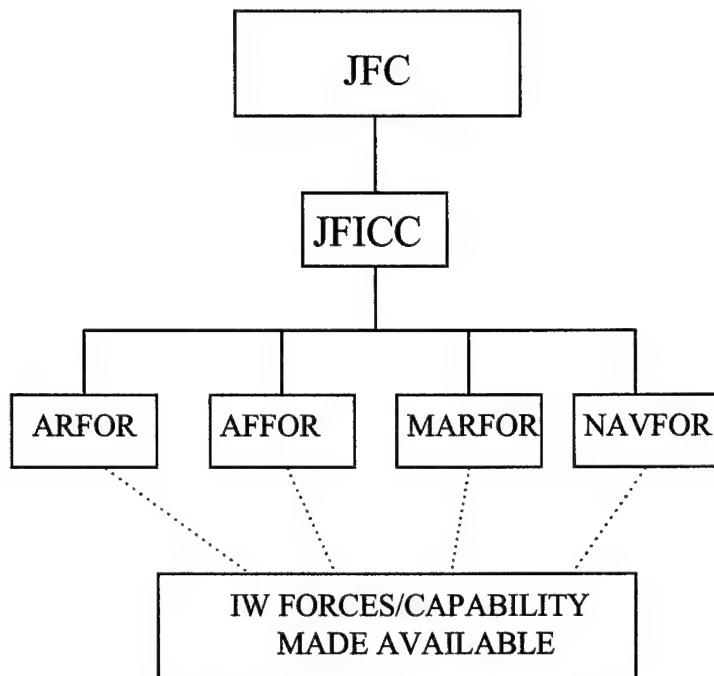
Figure 3. Possible JFICC Organizational Structure

Coordination in IW is just as important as in the battle to gain air superiority. For example, it is well understood air attacks against the enemy's center of gravity must be fully coordinated to avoid friendly fire and inefficient use of limited resources (multiple assets sent after the same target); similarly, IW attacks against an enemy's center of gravity must be fully coordinated. As discussed earlier, IW activities cover a wide spectrum: from destroying a target, to introducing an electronic virus to cause the same effect. Without a fully coordinated IW plan, it is possible one portion of the attacking force may dedicate their forces to destroy a target, while another portion is planning to eliminate the same target's effectiveness through electronic means. This inefficient use of resources can not be tolerated in an environment of severe cutbacks and force reductions.

Similarly, PSYOPS has been identified as a key component of IW. Another uncoordinated scenario might involve the special forces use of Commando Solo to override the enemies electronic broadcasts in order to broadcast our own psychological messages on their networks. It is possible the entire enemy's broadcast network might be "taken out" with a successful IW attack prior to the desired special forces Commando Solo broadcast. In this case, our uncoordinated IW activities might actually prove detrimental to our strategic military objective.

Creation of a JFICC functional position would help optimize use of limited IW resources through unity of effort (coordinated activities) and emphasis of joint warfighting. However, creation of a JFICC position can not be achieved by a service alone. JFICCs will be joint and therefore require the support and approval of the Joint Chiefs of Staff (JCS). Establishing a JFICC position will require the dedicated support of several service Chiefs of Staff. These senior level (independent service) representatives will need to formally petition the JCS (as a governing body) to create the JFICC position. As sitting members of the JCS, their input would contribute significantly to a positive decision. Once approval is granted, distributed staff officers who (in an uncoordinated manner) currently perform much of the "JFICC type" staff work, will need to be brought together to form a coordinated JFICC staff organization. Thus, the JFICC position can be created without an increase in the current staff manpower levels. Gaining the service Chief's dedicated support would merely require action officers to properly staff the service Chief's position papers. The creation of a JFICC would follow closely the development of the JFACC and its benefits would far exceed the efforts required to create it. Consider, for example the benefits derived from the establishment of a JFACC during Desert Storm.

General Horner, the JFACC designated for this conflict, enjoyed unprecedented command and control of most all services' air power assets, thus ensuring unity of effort and optimal use of available air power. According to Secretary of Defense Cheney, the resulting air campaign proved "decisive."[9] In fact, "the air campaign had all but won the war."[10] Similar accolades could result from a future JFICC focused and controlled IW campaign.

Create a Dedicated IW Corp

The final suggestion is the most aggressive, all encompassing organizational modification proposed. Dr. Libicki, a recognized expert in the area of IW, has called for the creation of a separate and distinct Information Corp.[11] He believes warfare is about to enter a new phase which will upset the balance between combat force and information. Information will no longer exist to support units of force; rather, information will become a unit of force in itself. Furthermore, despite this likely switch of emphasis from combat to information in warfighting, the services "remain organized around units of force."[12] Dr. Libicki argues "a separate corp and an associated command structure linking operations and intelligence will facilitate effective joint operations, promote the information revolution in warfare, unify the disparate information elements and give them an identity, create a common ethos for information warriors, and provide a unified interface with civilian information infrastructures."[13]

Unifying the disparate information elements would dramatically reduce the problem of non interoperability between individual services C^3I infrastructures. Consider Desert Storm for example; Air Force General Horner was designated the JFACC because the preponderance of air assets in the region belonged to the U.S. Air Force.[14] Thus, the Air

Force developed and disseminated the daily Air Tasking Order (ATO). Unfortunately, the Navy could not electronically receive and use the ATO because of incompatibilities between the Air Force and Navy C^3I infrastructures. As a result, the ATO had to be physically transported to the navy Carrier Battle Group. This represented an unnecessary diversion of resources away from striking enemy targets. Furthermore, this problem is going to become much worse as advanced special purpose sensors proliferate the battlefield. Former Secretary of Defense Les Aspin identified the problem of incompatibilities when he said, "Most of our systems for the dissemination of intelligence imagery cannot talk to each other."[15] A dedicated IW Corp would eliminate such incompatibilities through standardization of equipment, doctrine, and training for the IW warriors.

A dedicated IW Corp would be more likely to develop innovative approaches to IW. Dedicated IW warriors would not be constrained by the standard air superiority/aircraft operator culture when developing approaches for combat. Consider, for example, a mission to eliminate the effectiveness of an enemy's reconnaissance capabilities. An obvious "kick the tires and light the fires" fighter pilot approach might be to attempt to destroy the enemies airborne/spaceborne reconnaissance assets. A more creative approach might be to deceive the sensors through camouflage. Even better, an IW warrior might suggest indiscriminate "wire tapping" of the sensors output to observe what the enemy would see before they receive it. Further, he might suggest modification of the data stream to generate a false picture for the enemy. For example, we might electronically shift the location of the assets the enemy was attempting to observe. The IW warrior's approach has the distinct advantage of allowing the enemy to harmlessly act on bad

intelligence. Thus wasting his precious resources. The enemy may decide to launch an air strike against the target only to find its not where they expected it.

Consider the implications of such an approach used against the United States. We are beginning to routinely launch tomahawk cruise missiles based on our intelligence sensors identification and location of enemy targets. An extremely effective approach for the enemy would be to undermine U.S. public support by electronically leading us to believe the target's location was far from a civil population. While in reality, its location is actually in the middle of a civilian population (the younger the civilians the better—for effect). Pictures of our tomahawk missile's destruction and death of innocent civilians would immediately be news around the world. In fact, Sadaam Hussein successfully used this approach (although not electronically) by locating civilians in a command & control bunker we believed represented a valid military target. Propaganda pictures of the "civilian bomb shelter" destruction was broadcast on CNN repeatedly.

The creation of a separate IW Corp would enhance our understanding of the importance of IW to combat. The members of the corp would be dedicated IW specialists. The IW Corp would also lead to standardization of IW infrastructures and therefore help minimize current interoperabilities. Lastly, an IW Corp would help stimulate innovative IW solutions to combat missions and tasks.[16]

Notes

[1] Martin C. Libicki and James A. Hazlett, "Do We Need An Information Corps?," *JOINT FORCE QUARTERLY*, Autumn 1993, 88-97.

[2] Martin C. Libicki and James A. Hazlett, "Do We Need An Information Corps?," *JOINT FORCE QUARTERLY*, Autumn 1993, 93-94.

[3] Air Staff questionnaire submitted Jan 97 by Major Frye

[4] Major General Minihan, "Information Dominance: Meeting the Intelligence Needs of the 21st Century," *American Intelligence Journal*, Spring/Summer 1994, p 15.

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[5] Deputy Chief of Staff, Plans and Operations Headquarters, *United States Air Force publication*, "JFACC Primer," Second Edition, February 1994, 1.

[6] Ibid.

[7] Jeffery Barnett, *Future War*, January 1996, xxii.

[8] Jeffery Barnett, *Future War*, January 1996, xxii-xxiii.

[9] Michael Gordon and General Bernard Trainor, *The General's War*, 321.

[10] Michael Gordon and General Bernard Trainor, *The General's War*, 331.

[11] Martin C. Libicki and James A. Hazlett, "Do We Need An Information Corps?," *JOINT FORCE QUARTERLY*, Autumn 1993, 88-97.

[12] Martin C. Libicki and James A. Hazlett, "Do We Need An Information Corps?," *JOINT FORCE QUARTERLY*, Autumn 1993, 88.

[13] Martin C. Libicki and James A. Hazlett, "Do We Need An Information Corps?," *JOINT FORCE QUARTERLY*, Autumn 1993, 89.

[14] Deputy Chief of Staff, Plans and Operations Headquarters, *United States Air Force publication*, "JFACC Primer," Second Edition, February 1994, 11.

[15] Martin C. Libicki and James A. Hazlett, "Do We Need An Information Corps?," *JOINT FORCE QUARTERLY*, Autumn 1993, 90.

[16] Ibid.

Chapter 4

Recommended Organizational Modifications

Information warfare (IW) has emerged as a key joint warfighting mission area. The explosive proliferation of information-based technology significantly impacts warfighting across all phases, the range of military operations, and all levels of war.

—General Shalikashvili

The previous chapter outlined three suggested organizational modifications which could be undertaken to help ensure the Air Force achieves IS as a core competency. To review; the Air Force could establish an IW career field, it could press the Joint Staff to create a Joint Forces Information Component Commander (JFICC) position, or the DOD could establish a new Information Warfare Corp. This chapter will recommend that two of the three proposed modifications should be implemented.

The easiest organizational modification to implement—the establishment of an Air Force IW career field, would best help the Air Force achieve IS as a core competency and should be incorporated. It would dramatically help to establish an Air Force IW cultural ethos. Establishing an IW career field would also improve the retention of Air Force IW warriors (an issue previously discussed). Other services have also recognized the need for creation of such a specialized IW career field and are considering such actions. The Army, for example, is currently considering an 'Information Operations Career Field" which

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draws from the Information Systems, Operations, and Intelligence domains as part of their plans for Force XXI.[1]

The second suggested modification—the formation of a JFICC, should also be pursued. This will require active support and dedicated persistence by senior Air Force leaders to convince the Joint Staff to implement this organization modification. However; the effort would be well worth the cause. Namely, to provide a single authoritative focal point for all IW matters during a regional conflict for the supported commander. The single focal point would enhance the joint application of IW. For example, a chief complaint of the extensive Air Force reconnaissance infrastructure is its "stove pipe" non interoperable/non joint nature. Existence of a JFICC would help ensure modification and development of inter-service interoperability. Thus forcing services to acquire interoperable IW systems.

The final suggestion, establishing a new IW Corp within DOD would strongly support maximizing the benefits of incorporating IW into all our services warfighting toolkits. Implementing this suggestion; however, is not realistic given the current DOD drawdown environment. Therefore, this paper does not recommend attempting to establish a new IW Corp at this time. In the future, it is very possible IW innovations will allow more "efficient" warfighting—winning battles with less forces. Thus supporting the overall desire to "do more with less." When this happens, it may make a great deal of sense to establish an IW Corp—perhaps at the expense of a currently existing service.

Notes

[1] Army OPMS XXI TF PRESENTATION viewgraphs, dated February 1997.

Chapter 5

Summary

This paper considered the organizational impacts of the new information warfare technologies available. It assessed whether the Air Force was sufficiently reorganizing to completely accommodate IW and its benefits. The product of this assessment was a recommendation to do more: create an IW career field and form a JFICC position. The remaining paragraphs provide a more detailed summary.

The first chapter, "IW and the Air Force" formally defined Information Warfare (IW) and explained why IW is so important to the Air Force. IW was defined as an attack or defense from an attack against an information function. This chapter illustrated why the technologically dependent Air Force is highly vulnerable to an IW attack and why IW offers important means to accomplish many Air Force missions. This introductory chapter also introduced the argument that the Air Force has not reorganized sufficiently to accommodate the new combat realities resulting from information warfare. Finally, this chapter described the means of collecting the support data for this research project: an Air Staff questionnaire and literature searches.

The second chapter, "Current Air Staff IW Offices: Roles and Responsibilities" indicates the Air Force has claimed IS to be one of six core competencies. This chapter, however; argues, the previous Air Staff organization did not support achievement of an IS

core competency. This argument was based primarily on the competing nature between the functional offices of Intelligence (AF/IN) and Operations (AF/XO) and their separate "reporting" chains. The lack of guiding IW doctrine also supported this basic argument. This position was not examined in further detail; however, because the recent Air Staff reorganization appeared to have resolved many of the salient issues. Therefore, this chapter focused on the reorganized Air Staff and its key roles for IW. Specifically, three Air Staff/Secretariat offices (AF/SCT, AF/XOI, & SAF/AQI) were examined in detail. Their IW responsibilities and charters were discussed. In addition two field organizations (RL & AFIWC) were considered to determine their supporting IW functions. The chapter continues the argument that the Air Force has not sufficiently reorganized to maximize IW benefits and uses both a French/German tank technology interwar period historical example and the concern over the loss of capable IW experts to support the point.

The third chapter, "Suggested Organizational Modifications" provides three possible organization modifications (establish a dedicated IW career field, create a JFICC, or create an independent IW Corp) which could be implemented to ensure maximum IW benefit (and an IS core competency) is obtained. These three suggestions are supported with examples explaining why each would help the Air Force achieve an IS core competency.

The fourth chapter, "Recommended Organizational modifications" analyzes each suggested modification for feasibility and benefit. From this analysis, two of the suggestions, establish an IW career field and a JFICC, are recommended for implementation. The third suggestion, establish an independent IW Corp is not recommended at this time due to the current military downsizing environment.

Appendix A

Air Staff Information Superiority Questionnaire

ACSC AY97 RESEARCH PROJECT #:97-0603
AIR STAFF & SECRETARIAT INFORMATION SUPERIORITY QUESTIONNAIRE

The Oct 96 update to the Air Force Executive Guidance identifies Information Superiority as an organizational core competency. Yet (until the recent Air Staff reorganization) the Air Force did not appear to have a governing, hierarchical Air Staff organizational structure defined to guide development and implementation of critical Information Operations (IO) doctrine and related activities. It is vitally important for the Air Force to enter the IO age with a well considered strategic IO plan.

This questionnaire will obtain necessary support data for a research project to recommend an optimum Air Staff/Secretariat organizational structure and responsibilities for developing and implementing IO concepts and doctrines. It will also help clarify new Air Staff IO organizational responsibilities resulting from the recent Air Staff reorganization. Please provide a complete response to each question. I would like to thank you for taking the time out of your hectic Pentagon schedule to help me complete this research project.

Sincerely,
DWAYNE W. FRYE, Major, USAF
ACSC In-Residence student/Seminar 13

1. What is your organization/office's specific responsibility in helping to achieve the Air Force's core competency in INFORMATION SUPERIORITY?

2. Does your office have an approved IO purpose statement or similar "charter" to guide your IO activities?

    2 a. If yes, can I obtain it?

3. Please identify which "IO field" organizations your office primarily interfaces with and discuss the nature of this interface. (Is it a one way, directive relationship—or do you solicit input from the field to support accomplishment of your IO mission?)

4. From your perspective, which (if any) Air Staff office has the lead in developing IO doctrine and Operational Concepts?

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5. Please discuss how your office interfaces with the lead office (if not your office).

6. According to Martin Libicki and James Hazlett, establishing an "information corp" would help standardized service IO infrastructure. Do you believe the Air Force should establish a distinct IO organization to facilitate our growth in the IO domain? Please explain.

7. Are you satisfied the Air Staff/Secretariat's new organizational structure supports optimum development of IO within the Air Force? Can you provide any "lessons learned" from the previous organizational structure?

cc: SAF/AQI (Gen Nagy)
AF/XOIO (Col Lieberherr)
AF/XOID (Col Fielder)

Appendix B

Questionnaire Responses

SAF/AQI RESPONSES:

1. "AQI is the mission area responsible for acquisition of information dominance programs within the Air Force - sensors, command & control infrastructure, data links, and related info warfare programs."
2. "Our charter is governed by the operational requirements levied by the users of info ops systems."
3. "We interface with organizations at all levels of the DoD - OSD, the services, the users, and the developers. This is not directive - information flow is very much a two way street."
4. "Within the Air Staff these responsibilities are shared. AF/SC works the fixed site info protection of networks, etc. AF/XO worked requirements, and XOI (the old AF/IN) worries about interfaces with other DoD organizations (like NSA), and has a development responsibility thru AIA. ACC has been given executive agency responsibility and works with the Air Staff on how to best absorb the info ops area into our warfighting infrastructure. Clearly, relationships are still evolving and a number of stakeholders need to have a role - we are just scratching the surface; relationships will continue to evolve."
5. "See above. The notion of "lead" office is a difficult notion in the information dominance area. There are a number of domains attached to this construct - no one agency has the entire picture. I expect a great deal of evolution in our thinking about information superiority, info ops, and how best to serve warfighter needs over the coming months and years. The exciting thing is that our senior leadership is very much engaged and we recognize the huge leverage (and vulnerability) the future holds in this area. My assessment is that the Air Force is leading the DoD, but we are early in a long journey, and MUCH remains to be done - doctrinally, operationally, and technologically. Stay tuned."

AF/SCTW RESPONSES:
"Your first para is incorrect. Even prior to the reorganization of the Air Staff there was a well established organization for Information Warfare (IW) now called Information Operations. The lead for IW has always been in XO with supporting divisions from SC and IN."

1. "The SCTW responsibility is in Information Assurance (IA). IA is defined as: Information Operations that protects and defends information and information systems by ensuring their availability , integrity, authentication, confidentiality and non-repudiation. This includes providing for restoration of information systems by incorporating protection, detection, and reaction capabilities.

    Our specific functions are:
    1. Policy/Strategy/ Guidance
    2. Education, training, and awareness
    3. Technology assessment oversight and requirements review
    4. PEM ownership of 33140 (Cryptologic support and funding of AFIWC/EA activities)
    5. Oversight of Base Information Protect (BIP) in partnership with AF/SCMI
    6. Oversight of ESC/ICW and AFIWC/EA
    7. Representation on IA forums at Service ; DoD; and National levels."

2. "Yes. Our mission is: Provide timely, effective, and concise Information Assurance policy, guidance, strategy, capabilities, and program oversight to Air force people for military operations."

3. "Primary organizations are AF/XOI; AFCA; AFIWC; MAJCOMs; and ESC. Most interfaces are working in a partnership arrangement to further IO.

    AF/XOI: As the lead IO element

    AFCS: They write policy for us and conduct day to day operations with the MAJCOM information protect offices (IP)

    AFIWC: Provide all funding and management oversight

    MAJCOMs: Interface with IP office (check 33-200 series regulation for details).

    ESC: Oversight of implementation of BIP program across the AF - a $70 Million program."

4. "No perspective is needed, the recognized lead is XOI."

5. "As described above. Work on a daily basis to handle all IA issues and work closely to coordinate and team to further IO for the AF."

6. 'Yes for one fundamental reason. If we do not we will not be able to arrract and keep skilled people. If they see no future potential in the organization to progress, they will leave."

7. "No. The new organization places SC function as a DRU which sends the wrong signal as described above in number 6."

AF/XOIO RESPONSES:

1. "AF/XOIO is the Deputy Directorate for Information Operations (IO) and as such is the Air Staff focal point for all IO issues.

    NOTE: IO is an overarching term that includes all information activities such as Information Assurance, C4ISR, navigation, storage, & transmission, PSYOPS, Deception, and attack/destruction. These activities are performed across the "war spectrum" of peace-conflict-war- restoration-peace. Information Warfare (IW) is the application of information operations to achieve military objectives."

2. "Unfortunately, no. Approved and published IO/IW guidance and doctrine are severely lacking."
3. "Primary interfaces, bi-directional, are: with ACC which is identified CAF lead for IW, with AFIWC which is a FOA under AF/XO, and with AF/SC which has the information Assurance responsibility."
4. "AF/XOIO"
5. NA
6. "No. AF/XO is identified as the lead staff agency, yet AF/SC has become a DRU and "taken" Information Assurance with it."

RADC RESPONSES:
1. "Rome Lab is the lead AF lab responsible for performing R&D in support of Information Dominance. Information dominance and Information Superiority go hand in hand. Within Information Dominance, falls Information Operations (Warfare) related activities, therefore, RL supports the achievement of Information Superiority through research, development, and fielding of advanced defensive (Information Protect) tools, techniques and technologies."
2. "No. Rome Lab has stood up a dedicated IW office that will focus Information Warfare related R&D to support the AF warfighter and Joint/coalition forces. No specific charter or statement exists."
3. "RL interfaces primarily with both the Information Warfare Squadron (609th) and the Information Warfare Center (AFIWC). They provide us requirements, existing architectures and future (near term directions) and we provide technical assistance, appropriate R&D to satisfy their requirements and a long term (technology) vision."
4. "From our perspective, AF/SC seems to be the primary doer in working issues related to doctrine and conops. Though, I know AF/XO has been involved."
5. "We work closely with AF/SCT and AF/SCTW and AF/SCTT on a regular basis. This occurs mostly through attendance at Information Protection related working groups and meetings. We also visit with individuals from the mentioned offices regularly."
6. "Absolutely! The current state of organization is a mess. Most organizations don't appear to talk to or interact with others (both within and outside the AF). There needs to be a single AF focal point to ensure that at least somebody knows what is going on. I have heard, and its been supported by members from OSD, that the AF is the farthest ahead of the other services in IO concepts, operations and research. It was suggested that if the AF stood up and took the lead for the services, the Pentagon would stand up and clap. With the establishment of a single focal point, AF could do just that."
7. "Not familiar with the new organizational structure. But I do know the old structure didn't work well."

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